

ABSTRACT OF THE DISCLOSURE

Sample preparation apparatus and method includes a wafer stage platform with an optical microscope and integrated pattern recognition to automatically address specific locations on the wafer sample of interest. A laser attaches to the optical microscope to mill a set pattern around the area of interest. A precision micro-manipulator engages the sample support structure, extracts the structure, and places the structure in a TEM holder or holder tip. The holder or holder tip can then be placed inside a FIB for final thinning, followed by direct transfer into the TEM.